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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,870	09/27/2000	BOAZ OR SHRAGA	CM00914S	6829

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EXAMINER

SWERDLOW, DANIEL

ART UNIT	PAPER NUMBER
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2646

DATE MAILED: 10/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/670,870	<b>Applicant(s)</b> SHRAGA ET AL.	
	<b>Examiner</b> Daniel Swerdlow	<b>Art Unit</b> 2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 10-22, 24, 25, 28-32 and 34-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7, 10-20, 24, 32 and 34-37 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 21, 22, 25 and 28-31 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Applicant's amendment has overcome the objection to Claim 19 made in the prior Office action.

### ***Claim Rejections - 35 USC § 112***

2. Applicant's amendment has overcome the rejections of Claims 18 and 35 through 37 under 35 U.S.C. 112, second paragraph, made in the prior Office action.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 through 3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by

Capman et al. (EP 0 854 626 A1).

5. The cited European Patent Application is prior art under 35 U.S.C. 102(b) due to its publication date of 22 July 1998. For convenience, US Patent 6,108,413 is relied upon as an English translation thereof. References are made below to text and figures as they appear in the US Patent.

6. Regarding Claim 1, Capman discloses an echo canceller (Figs. 1, 6; column 7, lines 40-53) that: delivers (i.e., determines) an echo prediction signal  $y(n)$  that corresponds to the echo-

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replica signal claimed and inherently has a Euclidean norm (column 1, lines 30-32); produces (i.e., determines) an observation  $z(n)$  that corresponds to the input signal claimed and inherently has a Euclidean norm (column 1, lines 27-29); calculates (i.e., determines) a gradient (i.e., gradient step size) (column 2, lines 18-32); dynamically adjusting (i.e., correcting) the coefficients of an adaptive filter (column 1, lines 38-46) to derive an updated echo-replica signal; and delivering (i.e., determining) an updated error signal by deducting (i.e., subtracting) the echo prediction (i.e., echo-replica) signal from the observation (i.e., input) signal (column 1, lines 35-37).

7. Regarding Claim 2, Capman further discloses the echo prediction (i.e., echo-replica) signal being delivered (i.e., produced) by a digital filter from the reception (i.e., reference far-end) signal  $x(n)$  (column 1, lines 30-32). Capman further discloses the filter being adaptive (column 1, lines 38-46).

8. Regarding Claim 3, Capman further discloses the observation (i.e., input) signal including local speech (i.e., a near-end speech signal), echo components of the reception signal (i.e., an echo signal) and ambient noise (i.e., a noise signal) (Fig. 1, reference P, B, EC; column 1, lines 24-26).

9. Regarding Claim 6, Capman further discloses adaptation as a function of the reception (i.e., reference far-end) signal and the previous error signal (column 1, lines 38-46) in a gradient algorithm.

10. Claims 21, 22, 25 and 28 through 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirano (US Patent 5,608,804).

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11. Regarding Claim 21, Hirano discloses an echo canceller (i.e., an echo suppression method) (Figs. 8, 15; column 12, lines 36-52) that: estimates the level (i.e., amplitude measure) of the reference input (i.e., far-end) signal (Fig. 15, reference 321; column 15, lines 46-49); estimates the level of the error signal (Fig. 15, reference 312; column 15, lines 51-54); compares a threshold based on the estimated error signal level, which itself constitutes an error signal measure estimate, with estimated level of the reference input signal producing a compared result (i.e., a comparison value) (Fig. 15, reference 302; column 15, lines 57-61); and supplies the compared result to a noise level calculating (i.e., analyzing) circuit that produces an output signal that corresponds to the control signal claimed (Fig. 15, reference 304, 305; column 15, line 62 through column 16, line 4). Hirano further discloses hardware implementation using a DSP (i.e., the far-end and error signals are digital signal blocks containing at least one digital sample) (column 8, lines 48-54). Hirano further discloses performing the level estimating by taking a mean value (i.e., summing at least two) of inputs (i.e., samples) converted into non-negative values (i.e., absolute values) (column 14, lines 31).

12. Regarding Claim 22, Hirano further discloses the error signal is received from an echo canceller (column 15, lines 36-46).

13. Regarding Claim 25, Hirano discloses an echo canceller (i.e., an echo suppression apparatus) (Figs. 8, 15; column 12, lines 36-52) comprising: a reference input signal level estimating circuit (i.e., first amplitude estimation unit) (Fig. 15, reference 321; column 15, lines 46-49); an error signal level estimating circuit (i.e., second amplitude estimation unit) (Fig. 15, reference 312; column 15, lines 51-54); a comparator (i.e., a comparison unit) (Fig. 15, reference 302; column 15, lines 57-61) connected to the level estimating circuits; and a noise level

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calculating circuit (i.e., decision logic unit) connected to the comparator (Fig. 15, reference 304, 305; column 15, line 62 through column 16, line 4). Hirano further discloses the reference input signal level estimating circuit (i.e., first amplitude estimation unit) estimates the level (i.e., amplitude measure) of the reference input (i.e., far-end) signal (Fig. 15, reference 321; column 15, lines 46-49). Hirano further discloses the error input signal level estimating circuit (i.e., second amplitude estimation unit) estimates the level (i.e., amplitude measure) of the error signal (Fig. 15, reference 312; column 15, lines 51-54). Hirano further discloses performing the level estimating by taking a mean value (i.e., summing at least two) of inputs (i.e., samples) converted into non-negative values (i.e., absolute values) (column 14, lines 31).

14. Regarding Claim 28, Hirano further discloses: the reference input signal level estimating circuit (i.e., first amplitude estimation unit) estimates the level (i.e., amplitude measure) of the reference input (i.e., far-end) signal (Fig. 15, reference 321; column 15, lines 46-49); the error input signal level estimating circuit (i.e., second amplitude estimation unit) estimates the level (i.e., amplitude measure) of the error signal (Fig. 15, reference 312; column 15, lines 51-54); and the comparator (i.e., a comparison unit) (Fig. 15, reference 302; column 15, lines 57-61) compares a threshold based on the estimated error signal level, which itself constitutes an error signal measure estimate, with estimated level of the reference input signal producing a compared result (i.e., a comparison value).

15. Regarding Claim 29, Hirano further discloses the comparator (i.e., comparison unit) supplies the compared result to the noise level calculating circuit (i.e., decision logic unit) that produces an output signal that corresponds to the control signal claimed (Fig. 15, reference 304, 305; column 15, line 62 through column 16, line 4).

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16. Regarding Claim 30, Hirano further discloses the error signal is received from an echo canceller (column 15, lines 36-46).

17. Regarding Claim 31, Hirano further discloses: the reference input signal level estimating circuit (i.e., first amplitude estimation unit) estimates the level (i.e., amplitude measure) of the reference input (i.e., far-end) signal (Fig. 15, reference 321; column 15, lines 46-49); the error input signal level estimating circuit (i.e., second amplitude estimation unit) estimates the level (i.e., amplitude measure) of the error signal (Fig. 15, reference 312; column 15, lines 51-54); and hardware implementation using a DSP (i.e., the far-end and error signals are digital signal blocks containing at least one digital sample) (column 8, lines 48-54).

***Allowable Subject Matter***

18. Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

20. Claims 4 and 5 are allowable matter for reasons stated in the prior Office action.

21. Claims 7, 10 through 20, 24, 32 and 34 through 37 are allowed.

22. The following is an examiner's statement of reasons for allowance:

23. Regarding Claim 7, applicant has amended Claim 7 to include matter indicated as allowable in the prior Office action. As such the claim is allowable for reasons stated in the prior Office action.

24. Claims 10 through 20 are allowable due to dependence from Claim 7.

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25. Claim 24 is allowable for the reasons stated in the prior Office action.

26. Regarding Claim 32, applicant has amended Claim 32 to include matter indicated as allowable in the prior Office action. As such the claim is allowable for reasons stated in the prior Office action.

27. Claims 34 through 37 are allowable due to dependence from Claim 32.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### ***Response to Arguments***

28. Applicant's arguments filed 11 August 2005 have been fully considered but they are not persuasive.

29. Spanning pages 10 and 11 of the response filed on 11 August 2005, applicant alleges that the invention of Claim 1 is patentably distinct from Capman because Capman fails to disclose "determining a Euclidean norm of an echo-replica signal; [and] determining a Euclidean norm of an input signal" as claimed. Examiner respectfully disagrees. Because the Euclidean norm is a mathematical property of a signal, the signal itself determines what its Euclidean norm is. As such the steps of determining the Euclidean norms of the signals are inherent. In addition, the invention of Claim 1 makes no further use of the Euclidean norms. As such, even if the method were to recite, for example, "calculating" instead of "determining", for the purpose of Claim 1,



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the Euclidean norm of the signal would be an abstract mathematical concept that produces no tangible or concrete result. As such, the limitation would be given no patentable weight.

30. Spanning pages 11 and 12 of the response filed on 11 August 2005, applicant alleges that Hirano fails to disclose "said far-end signal and said error signal are digital signal blocks, each said digital signal block containing at least two digital samples and estimating said amplitude measure of said far-end signal comprises summing said absolute value of said at least two samples corresponding to said far-end signal, and estimating said amplitude measure of said error signal comprises summing said absolute values of said at least two samples corresponding to said error signal" as claimed in Claims 21 and 25. Examiner respectfully disagrees. As shown above in the prior art rejections of those claims, Hirano teaches these elements.

### ***Conclusion***

31. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

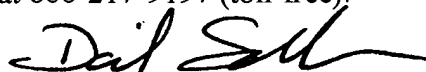
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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 571-272-7531. The examiner can normally be reached on Monday through Friday between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel Swerdlow  
Examiner  
Art Unit 2644

ds  
6 April 2005